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FILE 'BIOSIS' ENTERED AT 14:50:41 ON 03 OCT 2002
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=> s wipk or wound-induced protein kinase
L1 55 WIPK OR WOUND-INDUCED PROTEIN KINASE

=> s l1 and plant?
L2 51 L1 AND PLANT?

=> s l2 and transgenic
L3 23 L2 AND TRANSGENIC

=> dup rem l3
PROCESSING COMPLETED FOR L3
L4 13 DUP REM L3 (10 DUPLICATES REMOVED)

=> d 1-13 ti

L4	ANSWER 1 OF 13	AGRICOLA	DUPLICATE 1
TI	Questioning the role of salicylic acid and cytosolic acidification in mitogen-activated protein kinase activation induced by cryptogein in tobacco cells.		
L4	ANSWER 2 OF 13	CAPLUS	COPYRIGHT 2002 ACS
TI	Promoter analysis of WIPK , a gene encoding a tobacco MAP kinase, with reference to wounding and tobacco mosaic virus infection		
L4	ANSWER 3 OF 13	AGRICOLA	
TI	Activation of salicylic acid-induced protein kinase, a mitogen-activated protein kinase, induces multiple defense responses in tobacco.		
L4	ANSWER 4 OF 13	BIOSIS	COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
TI	Promoter analysis of WIPK : A tobacco wound induced MAP kinase.		
L4	ANSWER 5 OF 13	BIOSIS	COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
TI	Antisense expression of an Arabidopsis plastid omega-3 fatty acid desaturase gene enhances the necrotic lesion formation by TMV infection in transgenic tobacco plants .		
L4	ANSWER 6 OF 13	CAPLUS	COPYRIGHT 2002 ACS
TI	Differential induction of tobacco MAP kinases by the defense signals nitric oxide, salicylic acid, ethylene, and jasmonic acid		
L4	ANSWER 7 OF 13	CAPLUS	COPYRIGHT 2002 ACS
TI	A non-toxic pokeweed antiviral protein mutant inhibits pathogen infection via a novel salicylic acid-independent pathway		

- L4 ANSWER 8 OF 13 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 4
 TI Possible involvement of protein phosphorylation in the wound-responsive expression of Arabidopsis plastid .omega.-3 fatty acid desaturase gene
- L4 ANSWER 9 OF 13 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 5
 TI Early signalling events in the Avr9/Cf-9-dependent **plant** defense response
- L4 ANSWER 10 OF 13 CAPLUS COPYRIGHT 2002 ACS
 TI Pathogen-activatable MAP kinase **WIPK** to enhance disease resistance in **plants**
- L4 ANSWER 11 OF 13 AGRICOLA DUPLICATE 6
 TI Jasmonate-based wound signal transduction requires activation of **WIPK**, a tobacco mitogen-activated protein kinase.
- L4 ANSWER 12 OF 13 AGRICOLA DUPLICATE 7
 TI Rapid Avr9- and Cf-9-dependent activation of MAP kinases in tobacco cell cultures and leaves: convergence of resistance gene, elicitor, wound, and salicylate responses.
- L4 ANSWER 13 OF 13 CAPLUS COPYRIGHT 2002 ACS
 TI Cloning of cDNA for tobacco mitogen-activated protein (MAP) kinase that is a possible mediator in wound signal transduction pathways

=> d so

- L4 ANSWER 1 OF 13 AGRICOLA DUPLICATE 1
 SO Planta, Mar 2002. Vol. 214, No. 5. p. 792-797
 Publisher: Berlin ; New York : Springer-Verlag, 1925-
 CODEN: PLANAB; ISSN: 0032-0935

=> d ab

- L4 ANSWER 1 OF 13 AGRICOLA DUPLICATE 1
 AB Elicitors of **plant** defence reactions, oligogalacturonides and cryptogein, an elicitor produced by *Phytophthora cryptogea*, were previously shown to induce a rapid and transient activation of two mitogen-activated protein kinases (MAPKs) in cells of tobacco [*Nicotiana tabacum* L. cv. Xanthi; A. Lebrun-Garcia et al. (1998) **Plant J** 15:773-781]. We verified that these two MAPKs correspond to the salicylic acid-induced protein kinase (SIPK) and the **wound-induced protein kinase (WIPK)**. The involvement of salicylic acid (SA) in cryptogein-induced MAPK activation was investigated using **transgenic** NahG tobacco cells expressing the salicylate hydroxylase gene and thus unable to accumulate SA. The large and sustained activation of both MAPKs by cryptogein was maintained in **transgenic** cells compared with non-**transgenic** tobacco cells. Moreover, weak acids, namely SA, 4-hydroxybenzoic acid, an ineffective analogue of SA in **plant** resistance, and butyric acid acidified the cytosol, a physiological event also induced by cryptogein, but activated both MAPKs only slightly and transiently in tobacco cells. These results indicate that MAPK activation by cryptogein is not mediated by SA, that cytosolic acidification can be transduced by MAPKs, and that in cryptogein-treated cells, cytosolic acidification should contribute poorly to MAPK activation.

=> d au

- L4 ANSWER 1 OF 13 AGRICOLA DUPLICATE 1

AU Lebrun-Garcia, A.; Chiltz, A.; Gout, E.; Bligny, R.; Pugin, A.

=> d 2 ab

L4 ANSWER 2 OF 13 CAPLUS COPYRIGHT 2002 ACS

DUPLICATE 2

AB **WIPK (wound induced protein**

kinase) is a tobacco MAP kinase, transcripts of which are induced by mech. wounding and TMV infection. In order to clarify the mechanisms of regulation of **WIPK** expression, the authors isolated a 1122 bp section of the promoter region of the **WIPK** gene and fused it to the GUS reporter gene. Histochem. staining using a **transgenic** line contg. this construct clearly showed **WIPK** to be almost exclusively localized at or near the sites of wounding and necrotic lesions. To identify the responsive elements, 5'-deletion constructs contg. 874, 559 and 430 bp of the promoter regions, resp., were fused to GUS and **transgenic** tobacco lines contg. these constructs were assayed for GUS induction upon wounding or on stimulation of a hypersensitive response (HR) after TMV infection. Measurement of enzymic activity and Northern blot hybridization showed that the shortest promoter of 430 bp was sufficient for HR and a wound response, but that the extended region conferred a higher magnitude of response. It was thus suggested that, although the promoter region within 430 bp is essential, **WIPK** is regulated by multiple factors including enhancer-like elements residing beyond the core region.

=> d so

L4 ANSWER 1 OF 13 AGRICOLA

DUPLICATE 1

SO Planta, Mar 2002. Vol. 214, No. 5. p. 792-797

Publisher: Berlin ; New York : Springer-Verlag, 1925-
CODEN: PLANAB; ISSN: 0032-0935

=> d u

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L4 ANSWER 1 OF 13 AGRICOLA

DUPLICATE 1

AU Lebrun-Garcia, A.; Chiltz, A.; Gout, E.; Bligny, R.; Pugin, A.

=> d 3 ab

L4 ANSWER 3 OF 13 AGRICOLA

AB The activation of mitogen-activated protein kinases (MAPKs) is one of the earliest responses in **plants** challenged by avirulent pathogens or cells treated with pathogen-derived elicitors. Expression of a constitutively active MAPK kinase, NtMEK2DD, in tobacco induces the expression of defense genes and hypersensitive response-like cell death, which are preceded by the activation of two endogenous MAPKs, salicylic acid-induced protein kinase (SIPK) and wounding-induced protein kinase (**WIPK**). However, the roles that SIPK and **WIPK** each play in the process are unknown. Here we report that SIPK alone is sufficient to activate these defense responses. In tobacco leaves transiently transformed with SIPK under the control of a steroid-inducible promoter, the induction of SIPK expression after the application of dexamethasone, a steroid, leads to an increase of SIPK activity. The increase of SIPK activity is dependent on the phosphorylation of newly synthesized SIPK by

its endogenous upstream kinase. In contrast, the expression of **WIPK** under the same conditions fails to increase its activity, even though the protein accumulates to a similar level. Studies using chimeras of SIPK and **WIPK** demonstrated that the C terminus of SIPK contains the molecular determinant for its activation, which is rather surprising because the N termini of SIPK and **WIPK** are more divergent. SIPK has been implicated previously in the regulation of both **plant** defense gene activation and hypersensitive response-like cell death based on evidence from pharmacological studies using kinase inhibitors. This gain-of-function study provided more direct evidence for its role in the signaling of multiple defense responses in tobacco.

=> d 3 so

L4 ANSWER 3 OF 13 AGRICOLA
SO The Plant cell, Aug 2001. Vol. 13, No. 8. p. 1877-1889
Publisher: [Rockville, MD : American Society of Plant Physiologists,
c1989-
CODEN: PLCEEW; ISSN: 1040-4651

=> d 3 au

L4 ANSWER 3 OF 13 AGRICOLA
AU Zhang, S.; Liu, Y.

=> d 4 ab

L4 ANSWER 4 OF 13 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

=> d 4 so

L4 ANSWER 4 OF 13 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
SO Plant and Cell Physiology, (2001) Vol. 42, No. Supplement, pp. s146.
print.
Meeting Info.: Symposia and Workshops of the 2001 Annual Meeting of the
Japanese Society of Plant Physiologists Fukuoka, Japan March 23-26, 2001
Japanese Society of Plant Physiologists
. ISSN: 0032-0781.

=> s wipk and sipk

L5 35 WIPK AND SIPK

=> s l5 and plant?

L6 32 L5 AND PLANT?

=> dup rem l6

PROCESSING COMPLETED FOR L6

L7 16 DUP REM L6 (16 DUPLICATES REMOVED)

=> d 1-10 ti

L7 ANSWER 1 OF 16 AGRICOLA DUPLICATE 1
TI Questioning the role of salicylic acid and cytosolic acidification in
mitogen-activated protein kinase activation induced by cryptogein in
tobacco cells.

L7 ANSWER 2 OF 16 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
TI A 45-kDa protein kinase related to mitogen-activated protein kinase is

activated in tobacco cells treated with a phorbol ester.

- L7 ANSWER 3 OF 16 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 2
TI MAP kinase cascades in elicitor signal transduction
- L7 ANSWER 4 OF 16 AGRICOLA DUPLICATE 3
TI Activation of salicylic acid-induced protein kinase, a mitogen-activated protein kinase, induces multiple defense responses in tobacco.
- L7 ANSWER 5 OF 16 AGRICOLA DUPLICATE 4
TI Activation of a mitogen-activated protein kinase pathway is involved in disease resistance in tobacco.
- L7 ANSWER 6 OF 16 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
TI MAPK activation induced by cryptogein, an elicitor of tobacco defense responses.
- L7 ANSWER 7 OF 16 CAPLUS COPYRIGHT 2002 ACS
TI Molecular cloning and cultivar specific expression of MAP kinases from *Capsicum annuum*
- L7 ANSWER 8 OF 16 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 5
TI Differential induction of tobacco MAP kinases by the defense signals nitric oxide, salicylic acid, ethylene, and jasmonic acid
- L7 ANSWER 9 OF 16 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 6
TI Multiple levels of tobacco **WIPK** activation during the induction of cell death by fungal elicitors
- L7 ANSWER 10 OF 16 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 7
TI Protein kinases induced by osmotic stresses and elicitor molecules in tobacco cell suspensions: two crossroad MAP kinases and one osmoregulation-specific protein kinase

=> d ab

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